

Customer No.: 31561
Docket No.: 10545-US-PA
Application No.: 10/708,664

PRELIMINARY AMENDMENTS

To the Claims:

Claim 1. (currently amended) An under bump metallurgy layer, between a bonding pad of a chip and a bump, for improving adhesion between the bonding pad and the bump, ~~[[consisting of]]~~ comprising:

an adhesion layer, disposed on the bonding pad;

a barrier layer, disposed on the adhesion layer; and

a wetting-barrier layer, disposed on the barrier layer and between the barrier layer and the bump, wherein a material of the bump comprises tin, and wherein a material of the wetting-barrier layer is made of nickel, wherein the wetting-barrier layer has a thickness larger than that of the adhesion layer or that of the barrier layer, and the bump is disposed on the wetting-barrier layer and the wetting-barrier layer only covers an upper surface of the barrier layer.

Claim 2. (original) The under bump metallurgy layer of claim 1, wherein a material of the adhesion layer is selected from the following group consisting of titanium (Ti), titanium-tungsten (Ti-W) alloy, chromium (Cr), titanium nitride (TiN), tantalum nitride (TaN), tantalum (Ta), aluminum (Al) and copper (Cu).

Claim 3. (currently amended) The under bump metallurgy layer of claim 1, wherein a material of the adhesion layer is selected from the following group consisting of

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titanium, titanium-tungsten alloy, chromium, titanium nitride, tantalum nitride, tantalum and aluminum, ~~[[when]]~~ and the bonding pad is made of aluminum.

Claim 4. (currently amended) The under bump metallurgy layer of claim 1, wherein a material of the adhesion layer is selected from the following group consisting of titanium, titanium-tungsten alloy, chromium, titanium nitride, tantalum nitride, tantalum and copper, ~~[[when]]~~ and the bonding pad is made of copper.

Claim 5. (original) The under bump metallurgy layer of claim 1, wherein a material of the barrier layer comprises nickel-vanadium alloy.

Claim 6. (original) The under bump metallurgy layer of claim 1, wherein the under bump metallurgy layer further comprises an anti-oxidation layer and the anti-oxidation layer is disposed between the wetting-barrier layer and the bump.

Claim 7. **Cancelled.**

Claim 8. (currently amended) A flip chip structure, comprising:

a chip having an active surface, a passivation layer and a plurality of bonding pads, wherein the bonding pads are disposed on the active surface and the passivation layer are disposed on the active surface exposing the bonding pads;

an under bump metallurgy layer, wherein the under bump metallurgy layer ~~consisting of~~ comprising:

an adhesion layer, disposed on the bonding pad;

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a barrier layer, disposed on the adhesion layer; and

a wetting-barrier layer, disposed on the barrier layer, wherein a material of the wetting-barrier layer is nickel, and the wetting-barrier layer has a thickness larger than that of the adhesion layer or that of the barrier layer, and wherein the wetting-barrier layer only covers an upper surface of the barrier layer; and

a bump, disposed on the wetting barrier layer.

Claim 9. (original) The flip chip structure of claim 8, wherein a material of the adhesion layer is selected from the following group consisting of titanium (Ti), titanium-tungsten (Ti-W) alloy, chromium (Cr), titanium nitride (TiN), tantalum nitride (TaN), tantalum (Ta), aluminum (Al) and copper (Cu).

Claim 10. (currently amended) The flip chip structure of claim 8, wherein a material of the adhesion layer is selected from the following group consisting of titanium, titanium-tungsten alloy, chromium, titanium nitride, tantalum nitride, tantalum and aluminum, ~~[[when]]~~ and the bonding pad is made of aluminum.

Claim 11. (currently amended) The flip chip structure of claim 8, wherein a material of the adhesion layer is selected from the following group consisting of titanium, titanium-tungsten alloy, chromium, titanium nitride, tantalum nitride, tantalum and copper, ~~[[when]]~~ and the bonding pad is made of copper.

Claim 12. (original) The flip chip structure of claim 8, wherein a material of the

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barrier layer comprises nickel-vanadium alloy.

Claim 13. (original) The flip chip structure of claim 8, wherein the under bump metallurgy layer further comprises an anti-oxidation layer and the anti-oxidation layer is disposed between the wetting-barrier layer and the bump.

Claim 14. **cancelled.**

Claim 15. (original) The flip chip structure of claim 8, wherein a material of the bump is made of tin-silver-copper alloy.

Claim 16. (original) The flip chip structure of claim 8, wherein a material of the bump is made of tin-copper alloy.

Claim 17. (currently amended) The flip chip structure of claim 8, wherein a material of the bump is ~~comprises~~ tin.

Claims 18-21. **Cancelled.**